December 7, 1949.

Dr. E. Staban Wynne,
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Norman.

Dear Wynne:

Thank you for the reprints. From what you say, and what I have read, I've been running into something more or less like Halpert's work on coli-Shigella antagonisms, rather than "direct" antagonism, if indeed there is more than a difference in degree.

The antagonism is scarcely noticeable on agar plates (except that on EMB-sucrose orida streak there is a characteristic discoloration of the sensitive type) so the conditions of plating may well be critical. An ordinary nutrient agar plate, 15-20 ml., may be used as the base. The seeded layer can be nutrient broth + ca. 0.7% agar, or the following formula modified from Hershey's phage assay plates:

Agar 0.7
NZCase .7
glucose.1
NaCl .7 / 100 ml water.

3 ml. tubes are kept at 45-50 C., and seeded, as needed with two drops of ab24 hour culture of the sensitive.

Lytic zones as much as 3-4 mm. radius may be found.

Fortunately, I have been able to isolate resistant mutants from occasional secondary colonies appearing after several days in the lysed zone.

I am not entirely convinced that phage is out of the question. We might be dealing with lysogenic phage, secreted by the "killer" strain, but incapable of propogation on the sensitive. Such phage-bacterium interactions whereby the phage may kill a bacterium without propagating are known. But I don't really know enough about it yet.

Sincerely,

Joshua Lederberg